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Career Goals in High School: Do Students Know What it Takes to Reach Them, and Does it Matter?

by Marc Frenette

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.	not available for any reference period
..	not available for a specific reference period
...	not applicable
0	true zero or a value rounded to zero
0^s	value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p}	preliminary
^{r}	revised
x	suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E}	use with caution
F	too unreliable to be published

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Abstract

Do students know the education required to achieve their career objectives? Is this information related to their education pathways? To address these questions, the Youth in Transition Survey (YITS), Cohort A is used to compare high school students' perceptions of the level of education they will require for the job they intend to hold at age 30, with the level required according to professional job analysts at Human Resources and Skills Development Canada (HRSDC). The focus is on students intending to work in a job which requires a university degree, and examine the correlation between the knowledge of educational requirements and subsequent university enrolment. The results suggest that about three out of four students intending to work in a job requiring a university degree are aware of the education they will require. Evidence suggests that knowledge of educational requirements is related to academic performance and socio-economic background. Differences by intended occupation are quite small. Moreover, students who know that a university degree is required are more likely to attend university, even after accounting for differences in academic performance, sex, and socioeconomic background. In fact, the knowledge of educational requirements is as strongly related to university attendance as other well-documented correlates such as sex, academic performance and parental education. Finally, higher university attendance rates are observed when students learn earlier (rather than later), that a university degree is required for their intended job.

Keywords: educational requirements, student information, university attendance.

Executive summary

Do students know the education required to achieve their career objectives? Is this information related to their education pathways? To address these questions, the Youth in Transition Survey (YITS), Cohort A is used to compare high school students' perceptions of the level of education they will require for the job they intend to hold at age 30, with the level required according to professional job analysts at Human Resources and Skills Development Canada (HRSDC). Given the structure of the HRSDC rating, the focus is on students intending to work in a job, which according to HRSD requires a university degree. The correlation between the knowledge of educational requirements and future university enrolment is then examined.

Two questions in YITS are used to measure student perceptions of educational requirements for their intended career. The first question is:

- "What kind of career or work would you be interested in having when you are about 30 years old? (TELL US ONE ONLY)."

The answers to this question are coded into the NOC (National Occupational Classification), which contains information on educational requirements, based on employer interviews conducted by professional job analysts at HRSDC. The skill level is meant to reflect the most commonly accepted level recognized by employers for entry into an occupation. Of the four skill levels, the only one that clearly corresponds to a well-defined education level is skill level A (a university degree). For this reason, our study focuses on students who aspire to work in a job which, according to HRSDC requires a university degree.

The second question used to measure student perceptions of educational requirements for their intended career is:

- "How much education do you think is needed for this type of work? (MARK ALL THAT APPLY.)"

The education students believe is required for their intended occupation is then compared with the HRSDC benchmark. The results suggest that about three out of four students who intend to work in a job requiring a university degree are aware of the education they will require. Evidence suggests that knowledge of educational requirements is related to academic performance and socio-economic background. Differences by intended occupation are quite small. Moreover, students who know that a university degree is required are more likely to attend university, even after accounting for differences in academic performance, sex, and socioeconomic background. In fact, the knowledge of educational requirements is as strongly related to university attendance as other well-documented correlates such as sex, academic performance, and parental education. Finally, higher university attendance rates are observed when students learn earlier (rather than later), that a university degree is required for their intended job.

1 Introduction

There has been a surge in research investigating factors associated with access to post-secondary studies in Canada over the last five or so years. The main conclusions from the studies are:

- Family background (including parental education and parental birth place) plays an important role (e.g., Finnie, Sweetman, and Lascelles, 2005; Finnie and Mueller, 2008)
- Parental income plays a small role (e.g., Frenette, 2007), although *changes* to cost parameters may matter more (e.g., Frenette, 2008a)
- Academic performance matters considerably (e.g. Frenette, 2007)
- Gender is an important factor (e.g., Christofides, Hoy and Lang, 2006; Frenette and Zeman, 2007)
- Distance to school matters, although the reason(s) are not fully understood (e.g. Frenette, 2004, 2006, 2009).

In general, these factors are more strongly correlated with university attendance than with post-secondary enrolment. Despite the volume of studies, none have directly investigated the relationship between knowledge of education requirements and university attendance. Christofides, Hoy and Lang (2006) and Frenette and Zeman (2007), look at the role of actual returns to a university education to investigate gender differences in university attainment; however, they do not have information on the actual knowledge held by students regarding these returns. Bell and Bezanson (2006) conclude that career development services (broadly defined) can reduce the high school drop-out rate, especially for disadvantaged youth. In a controlled social experiment, the Social Research and Demonstration Corporation, in collaboration with the Canada Millennium Scholarship Foundation, are investigating the impact on future educational outcomes by providing high school students with education and labour market information (Currie et al., 2007).

This study fills the gap in the literature by answering three questions. First, to what extent do student perceptions of educational requirements for their intended career match the requirements according to professional job analysts at Human Resources and Skills Development Canada (HRSDC). Given the structure of HRSDC's rating, the focus is on students who intend to work in a job requiring a university degree. Second, what factors are correlated with student perceptions of educational requirements? Third, are student perceptions of educational requirements associated with subsequent educational outcomes?

To date, research has not investigated student perceptions of educational requirements for their intended career, either in Canada, or the rest of the world. There are studies (including some in Canada), that examine student knowledge of costs and benefits associated with higher education. Specifically, evidence from survey data conducted by Ipsos Reid suggests that Canadians tend to overestimate the cost, and underestimate the benefits, of a university education and that the estimation errors are larger among low-income Canadians (Usher, 2005). The current study contributes to our understanding of information constraints by assessing the extent to which students are aware of the educational requirement for their intended career, and its relationship with future outcomes.

The results suggest that about three out of four students intending to work in a job requiring a university degree are aware of the education they will require. Evidence suggests that knowledge of educational requirements is related to academic performance and socio-economic background. Differences by intended occupation are quite small. Moreover, students who know that a university degree is required are more likely to attend university, even after accounting for differences in academic performance, sex, and socioeconomic background. In fact, the knowledge of educational requirements is as strongly related to university attendance as other well-documented correlates

such as sex, academic performance, and parental education. Finally, higher university attendance rates are observed when students learn earlier (rather than later), that a university degree is required for their intended job.

The study proceeds as follows. In Section 2, the data and methods used in the study are described, including the approach adopted to measure student perceptions of educational requirements for their intended career. The results are presented in Section 3. Finally, conclusions are drawn in Section 4.

2 Methodology

The data for the study are drawn from the Youth in Transition Survey (YITS), Cohort A. This survey was developed in conjunction with the Programme for International Student Assessment (PISA), a project of the Organization for Economic Co-operation and Development that consisted of standardized tests in reading, mathematics and science. The target population consisted of students enrolled in an educational institution on December 31, 1999 who were 15-years-old on that day—that is, they were born in 1984. The assessment took place in April or May 2000 (Cycle 1). Furthermore, background questionnaires were administered to students through PISA and YITS. Parents and schools were also administered questionnaires through YITS. Students were followed-up every two years thereafter. Currently, data for Cycle 4 are available (when the same students are roughly 21-years-old).

Students living in the territories or on Indian reserves, as well as students who were deemed mentally or physically unable to perform in the PISA assessment and those with less than one year of instruction in the language of assessment were excluded. The survey design consisted of a two-stage approach. In the first stage, a stratified sample of schools was selected to ensure adequate coverage in all of the 10 Canadian provinces (including minority school systems in certain provinces). The stratification was based on the enrolment of 15-year-old students in the school in the previous academic year. In the second stage, a simple random sample of 15-year-old students within the school was selected. Given this complex survey design, variance measures based on the assumption of a simple random sample are incorrect. To address this issue, variance measures are estimated using a Taylor linear approximation.[1]

Two questions in YITS are used to measure student perceptions of educational requirements for their intended career. The first is:

- "What kind of career or work would you be interested in having when you are about 30 years old? (TELL US ONE ONLY)."

This question is asked when the student is 15-years-old and again, when the student is 17-years-old. Statistics Canada coded the descriptive text provided by the students into a SOC91 (Standard Occupational Classification – 1991) code. The SOC91 code does not contain information on educational requirements. However, SOC91 easily maps into the NOC (National Occupational Classification), which does contain information on educational requirements in its second digit. This information is based on employer interviews conducted by professional job analysts at Human Resources and Skills Development Canada (HRSDC). The second digit ranges from 0 to 6, which is grouped into the following four skill levels:

1. Although much less computationally intensive than the bootstrap approach, the Taylor linear approximation generally yields variances that are slightly higher than the true variances. In other words, significance may be slightly understated in this study. On the other hand, if results are found to be statistically significant, they are almost certainly statistically significant in actual fact.

Skill level A (Second digit NOC = 1):

- University degree at the bachelor, masters or post-graduate level.

Skill level B (Second digit NOC = 2 or 3):

- Two or three years of post-secondary education at a community college, institute of technology or CEGEP; or
- Two to four years of apprenticeship training; or
- Three to four years of secondary school and more than two years of on-the-job training, specialized training courses or specific work experience; or
- Occupations with supervisory responsibilities and occupations with significant health and safety responsibilities, such as firefighters, police officers and registered nursing assistants.

Skill level C (Second digit NOC = 4 or 5):

- One to four years of secondary school education
- Up to two years of on-the-job training, specialized training courses or specific work experience.

Skill level D (Second digit NOC = 6):

- One to two years of secondary school and short-work demonstration or on-the-job training.

Note that code 0 is missing from the list above. This corresponds to management occupations, which HRSDC does not classify into a skill level. Of the four skill levels, the only one that clearly corresponds to a well-defined education level is skill level A (a university degree). For this reason, this study focuses on students who aspire to work in a job which requires a university degree.

As described in the NOC Web site,[2] the skill level corresponds to the type and/or amount of training or education typically required to work in an occupation. Each skill level is intended to reflect commonly accepted paths to employment in an occupation. Where there are several paths to employment, the skill level most commonly identified by employers is used.

The second question used to measure student perceptions of educational requirements for their intended career is:

- "How much education do you think is needed for this type of work? (MARK ALL THAT APPLY.)"

This question immediately follows the previous one about career intentions. If students give more than one answer, the highest level only is captured. This approach yields a conservative estimate of the proportion of students who believe less education than the HRSDC benchmark is required.

The next step is to create a binary indicator of knowledge of educational requirements. Recall that the sample only includes students who aspire to an occupation that requires a university degree, according to HRSDC. Two alternative definitions are used:

2. See HRSDC (no date).

1. Students know the educational requirements for their intended career if they believe a university degree is required: that is, they agree with HRSDC.
2. Students know the educational requirements for their intended career if they believe a post-secondary certificate of some sort is required.

The first definition is the primary one, used throughout most of the study and based on the HRSDC benchmark. The second definition allows for the possibility of heterogeneous requirements across jobs within the same occupational classification (i.e., some jobs may require a university degree, while others may require a college certificate). Recall that HRSDC provides the level of education most commonly required by employers. Some employers may require less education and students might be aware of such employers. The second definition is used mainly as a test of robustness when the role of knowledge of educational requirements on educational choices is investigated. The definition is analogous to the one used by Galarneau and Morissette (2004), in their study of job mismatch among recent immigrants.

The first part of the analysis will examine student perceptions as an outcome. Covariates include sex, academic performance (PISA reading scores, the overall mark in school), birth order, parental background (education, income, immigrant status, presence), and school fixed effects. These variables are described in detail in Frenette (2008b). Descriptive sample statistics of these variables appear in Table A1 in the appendix. The estimation approach is ordinary least squares. Note, however, that results from logit and probit models are similar.

The relationship between years of schooling and student perceptions is also estimated. To do so, the fact that students in Nova Scotia and Québec enter the school system based on their age as of October 1 (Nova Scotia) or September 30 (Québec) is exploited, whereas in most other parts of the country, the cut-off date is December 31. This means that the first cycle of the data contains some students from grade 9 and 10 in Nova Scotia and Québec. Similar, the second cycle contains some students from grade 11 and 12 in Nova Scotia. In Québec, students were in grade 11 (the last year of high school in that province) or in Collège d'enseignement general et professionnel (CEGEP), or were out of the school system. For that reason, the discontinuity in Québec in the second cycle of the survey is not exploited.

A simple way to exploit the discontinuity in school grades is to regress the knowledge of educational requirements variable on the actual grade. Since some students may be held back (or may skip ahead), the actual grade with the initially assigned grade, based on the exact date of birth falling before, or after, the cut-off date is instrumented, all the while accounting for the remaining differences in age. The drawback of this approach is that it only allows for analysis of students in Nova Scotia and Québec. See Frenette (2008a) for more details on this approach.

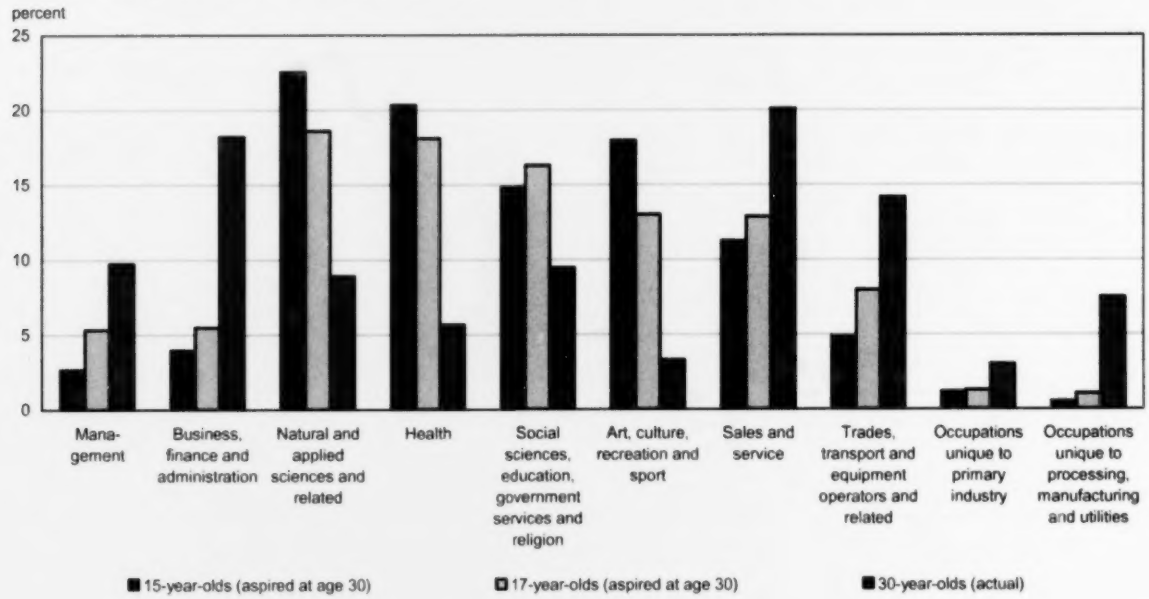
The final step in the analysis is to examine the extent to which knowledge of educational requirements are correlated with future educational outcomes (i.e., highest level attended by age 21). The main outcome examined is university attendance, although results for college attendance, as well as high school completion are also shown.

3 Results

Career aspirations

Before delving into the main results, it is worthwhile taking a step back to look at the distribution of career aspirations of students. Three occupational distributions are plotted in Chart 1. The first is the distribution of intended occupations by age 30, of youth when they are 15-years-old, using the YITS data. Similarly, the second shows the distribution when the same cohort is 17-years-old. These distributions are then compared to the actual distribution of occupations among 30 year olds in the 2001 Census. Recall that most of the analysis to follow focuses on youth who aspire to a job requiring a university degree (according to HRSDC). However, this is not the case in Chart 1. All youth are included, except for those who did not respond to the question on career aspirations (one in six). The results are aggregated at the first digit of the SOC91.

Chart 1
Percent distribution of occupations



Sources: Statistics Canada, Youth in Transition Survey (YITS), Cycles 1 and 2, and 2001 Census.

The results suggest that youth aspirations are different than the actual distribution of occupations in the economy. In particular, youth are more likely to aspire to work in occupations such as Natural and applied sciences and related, Health, Social sciences, education, government services, and religion, and Art, culture, recreation and sport. In reality, 30-year-olds are more likely to work in occupations such as Management, Business, finance and administration, Sales and service, Trades, transport and equipment operators and related, Occupations unique to primary industry, and Occupations unique to processing, manufacturing and utilities. Between ages-15 and-17, the distribution of intended occupations begins to look more like the actual distribution of occupations among 30-year-olds, but a large divide persists nonetheless. Given the nature of occupations involved, the gap between aspirations and realizations may be explained by unfulfilled aspirations to complete university. As noted in the introduction, we already know a considerable amount about the process underlying university attendance patterns. One potential factor that we know nothing about is the possible role of knowing what it takes to achieve one's career goals.

How many students have knowledge of educational requirements?

Students' knowledge of the educational requirements for their intended careers is shown in Table 1. All youth are included in the table. The results are broken down by level required (according to HRSDC). Here, there are three categories: university degree (skill level A), usually a non-university post-secondary certificate (skill level B), and no more than a high school diploma (skill levels C and D). At age 15, about 3 out of 4 students (77.8%), who aspire to a job requiring a university degree, know that a degree is required. About one out of 8 (12.1%) believe that no more than a high school diploma is required, or simply don't know. By age 17, knowledge is more closely aligned with the HRSDC baseline, with 83.8% believing a university degree is required. One possible reason for the increase is a compositional shift, as some students may not have been serious about their career aspirations at age 15. However, when individuals who want a job requiring a university degree in both periods are selected, the proportion who knows that a degree is required also rises (from 81.5% to 86.9%).

Table 1
Distribution of student perceptions of education required for their intended occupation

	Percentage distribution of student perceptions of education required				
Education required	Don't know	No more than a high school diploma	NUPS certificate	University degree	Total
			percent		
15-year-olds					
No more than a high school diploma	6.5	28.2	41.2	24.1	100.0
Usually NUPS certificate	8.0	14.2	44.9	33.0	100.0
University degree	7.0	5.1	10.2	77.8	100.0
17-year-olds					
No more than a high school diploma	0.0	17.4	59.3	23.2	100.0
Usually NUPS certificate	0.1	11.3	68.9	19.7	100.0
University degree	0.2	1.9	14.1	83.8	100.0

Notes: NUPS stands for non-university post-secondary. Figures may not add up to 100% because of rounding.
Source: Statistics Canada, Youth in Transition Survey, Cohort A.

The increase in the share of students with knowledge of the education requirements to reach their job aspirations may result from many sources, such as teachers, guidance counselors, parents, friends, or a personal initiative. The potential role (in a correlative sense), of student characteristics, parental influences and schooling will be assessed more carefully below.

Table 1 also contains information on students who aspire to a job requiring less than a university degree. It is interesting to note that a non-negligible portion of students actually believe that a university degree is required. For example, 23.2% of 17-year-olds who want a job requiring no more than a high school diploma in formal education believe that a university degree is required to meet their goal.

Who is more likely to have knowledge of educational requirements?

Table 2, focuses exclusively on students who want a job requiring a university degree. The percentage of students who know that a university degree is required is shown by intended occupation. The occupations are grouped into three-digit SOC91 codes. Note that certain specific occupations within these three-digit codes do not require a university degree; however, these occupations are excluded here since only students who aspire to occupations requiring a university degree are included.

Table 2
Percentage of students who know that a university degree is required for their intended occupation by intended occupation

Intended occupation	Students who know that a university degree is required	
	15-year-olds	17-year-olds
	percent	
Auditors, accountants and investment professionals	77.5	75.5
Human resources and business service professionals	F	F
Physical science professionals	91.8	95.8
Life science professionals	84.5	85.4
Civil, mechanical, electrical and chemical engineers	80.1	79.1
Other engineers	85.6	89.9
Architects, urban planners and land surveyors	68.5	80.7
Mathematicians, systems analysts and computer programmers	63.7	54.6
Physicians, dentists and veterinarians	92.4	96.9
Optometrists, chiropractors and other health diagnosing and treating professionals	83.9	93.5
Pharmacists, dietitians and nutritionists	85.5	94.7
Therapy and assessment professionals	85.6	94.1
Nurse supervisors and registered nurses	67.5	74.2
Judges, lawyers and Quebec notaries	90.5	97.9
University professors and assistants	F	94.7
College and other vocational instructors	F	F
Secondary and elementary school teachers and counsellors	87.9	96.0
Psychologists, social workers, counsellors, clergy and probation officers	77.1	84.0
Policy and program officers, researchers and consultants	87.8	95.5
Librarians, archivists, conservators and curators	F	F
Writing, translating and public relations professionals	66.8	81.2
Creative and performing artists	33.9	53.6

Note: Only students who intended to work in an occupation that requires a university degree are included in the sample.
Source: Statistics Canada, Youth in Transition Survey, Cohort A.

While most occupations are close to the broader results reported in Table 1, there are a few exceptions. For example, fewer than two out of three students who intend on working in a job classified under Mathematicians, systems analysts and computer programmers know that a university degree is required. Students who aspire to become Nurse supervisors and registered nurses or Creative and performing artists, are also less likely than other students to know that a university degree is required. On the other hand, the educational requirements of many other occupations are well-known among students, including: Physical science professionals, Physicians, dentists and veterinarians, Pharmacists, dieticians and nutritionists, Therapy and assessment professionals, Judges, lawyers and Quebec notaries, Secondary and elementary school teachers and counsellors, and Policy and program officers, researchers and consultants.

In Table 3, the factors associated with one's knowledge of educational requirements are presented. Once again, only students who aspire to a job requiring a university degree are included. The goal here is to model the probability of knowing that a university degree is required as a function of various individual and socioeconomic characteristics. The estimation approach is a linear probability model, so that coefficient estimates can be interpreted as percentage probability effects.

Table 3
Impact of student characteristics and strategies on the probability of knowing a university degree is required

	15-year-olds		17-year-olds	
	coefficient	standard error	coefficient	standard error
Variables				
Female	0.0083	0.0179	0.0675 ***	0.0174
60% Overall mark 69%	0.0092	0.0677	0.1116	0.0922
70% Overall mark 79%	0.0864	0.0673	0.2018 **	0.0909
80% Overall mark 89%	0.1950 ***	0.0665	0.2689 ***	0.0919
Overall mark 90%	0.2452 ***	0.0675	0.2732 ***	0.0936
2nd reading quartile	0.0717 **	0.0356	0.0624 *	0.0344
3rd reading quartile	0.1134 ***	0.0338	0.0951 ***	0.0314
4th reading quartile	0.1189 ***	0.0342	0.1294 ***	0.0346
Birth order	0.0309	0.0618	-0.0492	0.0494
Birth order squared	-0.0101	0.0165	0.0124	0.0121
Two parents, not both from birth	-0.0559	0.0370	-0.0536	0.0405
Two birth parents	-0.0511	0.0313	0.0105	0.0281
Parents have a non-university PS certificate	0.0623 ***	0.0236	0.0212	0.0214
Parents have an undergraduate degree	0.0951 ***	0.0265	0.0473 **	0.0227
Parents have a graduate or professional degree	0.0860 ***	0.0322	0.0457	0.0282
2nd parental income quartile	0.0565 **	0.0265	0.0483 *	0.0272
3rd parental income quartile	0.1083 ***	0.0275	0.0228	0.0272
4th parental income quartile	0.0796 ***	0.0284	0.0716 ***	0.0264
All parents are immigrants	0.0828 ***	0.0250	0.0437 *	0.0231
Intercept	0.7272 ***	0.0886	0.7177 ***	0.1084
Diagnostic statistics	15-year-olds		17-year-olds	
Adjusted R-squared	0.1503		0.1937	
Sample size (number)	5,208		4,832	

*p<0.1
**p<0.05
***p<0.01
Notes: Only students who wanted a job requiring a university degree at a point in time are included in the sample. The model is estimated by ordinary least squares, and school fixed effects are included. PS stands for post-secondary.
Source: Statistics Canada, Youth in Transition Survey, Cohort A.

The probability of knowing the educational requirement for one's intended job is positively correlated with academic performance and parental background, including education, income, and immigrant status. The coefficients for parental background measures are larger at age 15 than at age 17. At age 15, there are no gender differences, while at age 17, females are more likely than males to have correct knowledge. Finally, birth order and parental presence are not statistically significant factors.

In Table 4, the estimates of the relationship between years of schooling and student knowledge of job requirements (with a first-stage to instrument for the actual grade) are shown. Recall that this analysis is only possible in certain jurisdictions (Québec and Nova Scotia). While the first-stage coefficients are highly significant (suggesting a strong instrumental variable), the second stage estimates are actually negative, albeit not significant. This suggests no correlation between additional schooling and knowledge about educational requirements. Why might this be the case? Although this study does not (and can not) provide a clear answer to this question, some insights might be available in Bell and Bezanson (2006). They use a variety of national and provincial surveys to investigate use of career development services, and conclude that most young Canadians do not have adequately use access to these services. It is not clear from their study whether youth are not using career development services because they do not wish to do so, or because they are simply not available.

Table 4
Impact of one additional year of schooling on the probability of knowing a university degree is required

	15-year-olds sample		17-year-olds sample	
	coefficient	standard error	coefficient	standard error
First stage: Impact of being born before the school entry ABC cut-off on school grade	0.5598 ***	0.0673	0.3985 ***	0.0808
Second stage: Impact of one additional school grade on knowing that a university degree is required for intended career	-0.1245	0.0950	-0.1731	0.1550

*p<0.1
**p<0.05
***p<0.01

Notes: Only school grade students from Nova Scotia and Quebec (15-year-olds) or Nova Scotia (17-year-olds) who wanted a job requiring a university degree at a point in time are included in the samples. This includes 1,317 15-year-olds and 484 17-year-olds. All models are estimated by ordinary least squares and include the covariates listed in Table 2 (except the strategy variables), as well as school fixed effects and age (in years).
Source: Statistics Canada, Youth in Transition Survey, Cohort A.

Is knowledge of educational requirements related to future attendance?

In Table 5, the results of regressing various levels of educational attainment (either completed or attended) on the knowledge of educational requirements at either age 15 or 17 are shown, controlling for the characteristics mentioned so far. Recall that only students who aspire to a job requiring a university degree are included in the sample at this point. Furthermore, there is a return to the main sample (all youth from all regions) from this point onward. The results suggest that students who know at age 15 that a university degree is required have a 15.5 percentage point higher university enrolment rate by age 21. Repeating the analysis for 17-year-olds, the figure almost doubles (to a 29.1 percentage point advantage). These numbers are comparable to several well-known correlates of university attendance, such as sex, overall marks and parental education. See Frenette (2007), for results pertaining to those correlations.

Table 5
Impact of student perceptions of education required on educational outcomes

	Completed high school		Attended post-secondary		Attended university	
	coefficient	standard error	coefficient	standard error	coefficient	standard error
Knows a university degree is required (age 15)	-0.0069	0.0120	0.0457 **	0.0213	0.1547 ***	0.0237
Knows a university degree is required (age 17)	0.0481 **	0.0192	0.1339 ***	0.0285	0.2912 ***	0.0280
Difference	0.0549 **	0.0227	0.0882 **	0.0356	0.1365 ***	0.0367

*p<0.1
**p<0.05
***p<0.01

Notes: Only students who wanted a job requiring a university degree at a point in time are included in the samples. This includes 5,208 15-year-olds and 4,832 17-year-olds. All models are estimated by ordinary least squares and include the covariates listed in Table 2 (except the strategy variables), as well as school fixed effects.
Source: Statistics Canada, Youth in Transition Survey, Cohort A.

Perhaps it is not surprising that students who know that a university degree is required for their intended career are more likely to attend university. But does knowing earlier matter? Earlier knowledge may help students prepare accordingly for university application. Given the structure of the YITS data, the distinction here is between ages 15 and 17. Results from a regression of university attendance on the pathways of knowledge, between the ages of 15 and 17 among students who aspired to a career requiring a university degree at both points in time are shown in Table 6. Four distinct pathways are possible (two possible states—either they are aware that a

university degree is required or not aware—in each period). The omitted category is: 'knowing that a university degree is required' in both periods.

Table 6
Impact on university attendance of trajectory of student perceptions of education required

	Knowledge of university degree requirement		University attendance	
	Student perceptions at age 15	Student perceptions at age 17		
			coefficient	standard error
Pathways				
State 1	No university degree	No university degree	-0.3704 ***	0.0435
State 2	No university degree	University degree	-0.1690 ***	0.0380
State 3	University degree	No university degree	-0.3198 ***	0.0479
State 4	University degree	University degree	Omitted	Omitted

*p<0.1
**p<0.05
***p<0.01

Notes: Only students who wanted a job requiring a university degree at age 15 and 17 are included in the sample. This includes 3,348 youth. The model is estimated by ordinary least squares and includes the covariates listed in Table 2, as well as school fixed effects. Note that school marks at ages 15 and 17 are interacted.
Source: Statistics Canada, Youth in Transition Survey, Cohort A.

Among students who at age 17, knew that a university degree was required for their intended career, does it matter if they were aware of this earlier (at age 15)? The answer is yes: students who didn't know at age 15 were 16.9 percentage points less likely to attend university than those who knew at both points in time, which is statistically significant at 1%.

Testing the robustness of this result is warranted. These results appear in Table 7. First, recall from the methodology section that an alternative definition of educational requirements is used. In this instance, if students believe that any type of post-secondary certificate is required, then they are deemed to know the level required (even if the HRSDC standard is a university degree). This measure is adopted because it is possible that not all jobs in the same occupational classification require the same level of education. In the top portion of the table, the results indicate that failure to know the requirements (as defined here), is related to a lower probability of both university and post-secondary attendance in general. The estimated magnitudes are 11.1 and 13.1 percentage points, respectively. In both cases, they are statistically significant at 1%.

Second, the causal nature of this relationship is questionable given the lack of an identification strategy, and the possibility that students who more strongly aspire to their intended career are more likely to inform themselves about the educational requirements to achieve their goal. However, respondents in YiTS are asked, "How certain are you that you will eventually have this career or work?" The possible answers are: very certain, fairly certain, fairly uncertain, and very uncertain. When dummy variables corresponding to these categories are added to the models, the results are largely unchanged (as suggested by the bottom of Table 7). Once again, the coefficients are statistically significant at 1%.

Table 7
Impact of trajectory of student perceptions of education required on university and post-secondary attendance

	Knowledge of education requirement		University attendance		Post-secondary attendance	
	Student perceptions at age 15	Student perceptions at age 17	coefficient	standard error	coefficient	standard error
Less certain career intentions						
Patways						
State 1	Don't know or high school or less	Don't know or high school or less	-0.1502	0.1350	-0.1027	0.1454
State 2	Don't know or high school or less	Post-secondary certificate	-0.1114 ***	0.0409	-0.1306 ***	0.0354
State 3	Post-secondary certificate	Don't know or high school or less	-0.0997	0.1062	-0.0825	0.0846
State 4	Post-secondary certificate	Post-secondary certificate	Omitted	Omitted	Omitted	Omitted
More certain career intentions						
Patways						
State 1	Don't know or high school or less	Don't know or high school or less	-0.1686	0.1444	-0.1163	0.1479
State 2	Don't know or high school or less	Post-secondary certificate	-0.0963 **	0.0383	-0.1406 ***	0.0369
State 3	Post-secondary certificate	Don't know or high school or less	-0.0884	0.1012	-0.0843	0.0827
State 4	Post-secondary certificate	Post-secondary certificate	Omitted	Omitted	Omitted	Omitted

*p<0.1
**p<0.05
***p<0.01
Notes: Only students who wanted a job requiring a university degree at age 15 and 17 are included in the sample. This includes 3,348 (3,298) youth in the models without (with) the certainty of working in intended career. The model is estimated by ordinary least squares and includes the covariates listed in Table 2, as well as school fixed effects. Note that school marks at ages 15 and 17 are interacted, as are certainty of working in intended career at ages 15 and 17.
Source: Statistics Canada, Youth in Transition Survey, Cohort A.

4 Conclusion

This study has examined high school students' knowledge of educational requirements for their intended career at age 30, as well as the role of this knowledge in shaping future educational decisions. The study adds to a large body of literature on factors associated with higher education, which has largely focused on factors such as academic performance, parental income, distance to school, sex, parental education and immigrant status. To date, research has not investigated student perceptions of educational requirements, either in Canada or the rest of the world.

The results suggest that about three out of four students intending to work in a job requiring a university degree are aware of the education they will require. Evidence suggests that knowledge of educational requirements is related to academic performance and socio-economic background. Differences by intended occupation are quite small. Moreover, students who know that a university degree is required are more likely to attend university, even after accounting for differences in academic performance, sex, and socioeconomic background. In fact, the knowledge of educational requirements is as strongly related to university attendance as other well-documented correlates such as sex, academic performance, and parental education. Finally, higher university attendance rates are observed when students learn earlier (rather than later), that a university degree is required for their intended job.

Appendix

Table A.1
Sample statistics of covariates used in the analysis

	15-year-olds		17-year-olds	
	mean	standard deviation	mean	standard deviation
Variables				
Female	0.5786	2.0407	0.5708	2.0062
Overall mark<60%	0.0366	0.7761	0.0200	0.5681
60% Overall mark 69%	0.1216	1.3508	0.1001	1.2164
70% Overall mark 79%	0.3095	1.9105	0.3672	1.9538
80% Overall mark 89%	0.4096	2.0323	0.4075	1.9916
Overall mark 90%	0.1227	1.3558	0.1052	1.2433
1st reading quartile	0.1590	1.5113	0.1678	1.5145
2nd reading quartile	0.2213	1.7156	0.2282	1.7011
3rd reading quartile	0.2920	1.8791	0.2730	1.8057
4th reading quartile	0.3277	1.9397	0.3310	1.9073
Birth order	1.4982	2.8189	1.5022	2.7830
Lone parent	0.1295	1.3875	0.1321	1.3722
Two parents, not both from birth	0.1134	1.3104	0.1127	1.2817
Two birth parents	0.7571	1.7722	0.7552	1.7426
Parents have high school or less	0.2878	1.8710	0.2879	1.8351
Parents have a non-university post-secondary certificate	0.3630	1.9873	0.3565	1.9413
Parents have an undergraduate degree	0.2231	1.7205	0.2250	1.6926
Parents have a graduate or professional degree	0.1261	1.3721	0.1306	1.3657
1st parental income quartile	0.2375	1.7588	0.2433	1.7391
2nd parental income quartile	0.2325	1.7458	0.2341	1.7162
3rd parental income quartile	0.2488	1.7866	0.2493	1.7534
4th parental income quartile	0.2812	1.8580	0.2733	1.8063
All parents are immigrants	0.2147	1.6970	0.2146	1.6639
Diagnostic statistic	15-year-olds		17-year-olds	
Sample size (number)	5,230		4,851	

Notes: Only students who wanted a job requiring a university degree at a point in time are included in the samples.
Source: Statistics Canada, Youth in Transition Survey, Cohort A.

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